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THE POSSIBILITIES OF CLASSROOM EXPERIMENT

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One of my favorite rainy-day amusements as a child was to thumb over old copies of the *Delineator* up in the storeroom, and marvel at the kaleidoscopic march of fashion. Fashion in the educational world is as stern an arbiter as in the world of dress; her dictates to the English teacher have been all-varied, and now one may find diversion and interest in thumbing over old files of the *English Journal* and noting in review supervised study, the correlation of literature and composition, oral composition, the conference hour, dramatization, the "suit the action to the word idea," as Emmy Lou phrases it. The project method, the socialized recitation, laboratory English, and experimental classroom work come later. Some of these modes have been of permanent value, and now are in the daily schedule; some were fads of an hour.

Classroom experiment has been the vogue in certain educational quarters for years; in our field it has been a far cry, and few have hearkened to it. This paper will attempt to show by a summary of several experiments performed under actual classroom conditions that such work can be done by the interested high-school teacher without highly specialized training. The very technical vocabulary of some of our experimenters tends to frighten mere laymen from the field. It will show further that the actual classroom testing of problems is a far more valuable and scientific way to establish

conclusions than our time-honored and much-abused acceptance of personal opinion, often biased, always varied, and no safe standard on which to build a curriculum or direct the procedure of class work. Last, some problems will be suggested, the solution of which would be of real service to teachers of English.

As background material for this paper, I looked up the literature on the subject. Experimental work in elementary-school subjects is abundant, some of it of distinct benefit to the English teacher, especially the work done in spelling and reading. Experimental work in the general field of English, however, is most meager. Let it be understood that I do not imply that English teachers do not experiment with their classes. The live English teacher's work from year to year is a series of problems, both of curriculum and method, valuable to teacher and class. These rather empirical experiments, however, possess only local value because they are not in print. Professional advancement and growth of our subject demands a record of worth-while experiments, that they be accessible to other teachers.

In a paper prepared last year for the Illinois Association of English Teachers a survey was made of three hundred high schools of Illinois, and from the testimony of English teachers themselves it was shown that textbooks largely determined the teaching of English composition. From an analysis of the texts used by these teachers, because of their bewildering number and the infinite variety shown in the presentation of subject-matter, as well as the wide variety of subjects sheltered in composition books, one might conclude that the method of teaching any phase of composition varies as often as there are different teachers and texts. Why not, by actual classroom experiment, test different composition materials and methods with classes of equal ability, and determine, by measuring the progress made, the plan which gives greatest economy of time? A real contribution to the curriculum would result.

May I describe to you, in some detail, a study which I set out to make this year of literary reactions and attitudes of boys and girls? The most important aspect of this study is not the original experiment but the group of suggestive problems which developed from the original one. Work on this problem was stimulated by a

chance remark of one of our educators who claims that we know little about the education of girls, that girls have been placed in an educational system made by and for men, that the education of women has been hopelessly bungled. For years, in rather an empirical fashion, I have been interested in the very obvious difference in reactions made by boys and girls in my English classes. In order to study the problem more scientifically, I requested that two Freshman classes be segregated in boy and girl groups and assigned to me. Accordingly, in September I was assigned two classes, English IA boys and English IA girls, reciting the first two periods in the morning.

For the past two years our entering Freshmen have been divided into A, B, and C groups, based upon the recommendations of the eighth-grade teachers. The teachers' recommendations are based upon various tests in silent reading and in intelligence, upon school grades, and, most potent of all, upon their judgment of the various abilities revealed after an acquaintance of a year or more. The grouping, as a result, is not scientific, since there are judgments of 15 or more eighth-grade teachers. Groups of A rank were assigned for this experiment, since it was felt that possibly these groups should be more evenly balanced than the B and C groups, and that their literary reactions would be more positive. My experience with B and C groups assigned to me last year showed that the abilities were most unequal, due in some measure at least to the presence of "failure" and "condition" pupils, whom we always have with us.

Only a few days in September were necessary for me to discover that the group of A girls was much stronger as a group than the A boys. When the Freshman supervisor of boys was told my judgment of the two groups, we consulted the office records, and found that of 337 entering Freshman girls, 49 were given A rank in English by their grade teachers, whereas of 307 entering Freshman boys, 13 were given A rank in English. Four times as many girls as boys were considered superior in English work in the grades. Because of this scarcity of A material among the entering boys, my class, English IA boys, contains 12 boys of B rank. The supervisor suggested that, when the grades came in at the end of seven weeks,

I should probably find that these boys were A students in other studies, and that I had a group of the strongest Freshman boys in school, rated in general scholarship. Responsive to his suggestion, at the end of seven weeks I checked the grades of my two groups in all subjects with the following results.

TABLE I

	AA	A	B	C	D	Number in Class
Boys.....	$\begin{Bmatrix} 1 \\ 1\% \end{Bmatrix}$	$\begin{Bmatrix} 14 \\ 14\% \end{Bmatrix}$	$\begin{Bmatrix} 48 \\ 48\% \end{Bmatrix}$	$\begin{Bmatrix} 28 \\ 28\% \end{Bmatrix}$	$\begin{Bmatrix} 9 \\ 9\% \end{Bmatrix}$	20
Girls.....	$\begin{Bmatrix} 6 \\ 5\% \end{Bmatrix}$	$\begin{Bmatrix} 40 \\ 33\frac{1}{3}\% \end{Bmatrix}$	$\begin{Bmatrix} 63 \\ 52\% \end{Bmatrix}$	$\begin{Bmatrix} 10 \\ 8\% \end{Bmatrix}$	$\begin{Bmatrix} 1 \\ .8\% \end{Bmatrix}$	24

63 per cent in boy group average B or A in all their work

37 per cent in boy group average below B in all their work

90.8 per cent in girl group average B or A in all their work

9 per cent in girl group average below B in all their work

How should these figures be interpreted by the teacher of English? It is significant to know that four times as many girls as boys excelled in English according to grade-teacher judgments. Should English teachers accept this as a harmless necessary evil or meet it as a challenge? In these two classes selected carefully for excellence in English, 90.8 per cent of girls have a general school average of B or A, while only 63 per cent of the boys maintain an average of B or A in general scholarship. It will be recognized that this boy group does not necessarily mean the highest group in general scholarship; it does mean that the group chosen as capable of best English work, by the best judgments of the grade teachers, is not only of much lower rank in English than the girl group but below the girls in general scholarship. I draw no deductions; I simply tell you how it is with us in Oak Park.

With the end in view of testing literary attitudes and reactions of boys and girls of somewhat equal ranking, such as I expected to find in these groups, I had worked out a careful schedule of tests along many lines of language and literature. This program included

standard tests in intelligence, in reading, in spelling; it included tests in memory, imagination, appreciation, criticism, curiosity. The inequality of the groups makes this material of little value. Let this brief statement suffice: In the (Monroe) Standardized Silent Reading Test III, Form 2, the scores were as follows: rate—boys 68, girls 78; comprehension—boys 28, girls 32. The Rugg-Freeman Intelligence Tests revealed a corresponding difference. On our 200-word minimum spelling list for Freshmen, which each student must pass at 100 per cent before he is given a final grade in English I, the girls averaged 99.3 per cent on the test after study, while after preparation the boys averaged 96.5 per cent. With no previous preparation the girls averaged 99.3 per cent on the Jones spelling list; under like conditions the boys averaged 96 per cent. The same variation in spelling ability was found with the Starch lists. In grading compositions by our list of minimum essentials, the percentage of error shows the boys lagging hopelessly behind, as do they in oral themes, memory work, interpretation and appreciation of literature.

Especially in the scope of material and in the amount of written and oral work do the girls as a group outpace the boys. Brevity in one's writing is a potent factor if it means terseness and epigrammatic force, but all too frequently the brevity of the boys reveals merely a laxness toward subject-matter. They do not plow deep enough. Imagination, easily directed along English channels, the girls have, nor are they afraid of using it. They revel in beauty of expression and look upon a fine phrase as did Keats. They take directions much better and follow them out more conscientiously. They ask endless questions in order to be sure that they will get the assignment properly. A teacher in a private school writes of the differences she has observed in boy and girl groups thus:

The girls love beauty more even than they enjoy a joke. They admire words. One of them told the other day of being in Rome last spring, of seeing the Pope in all his gorgeousness; she described a hillside sloping to the sea where lemons hung yellow on their little round trees, and loquats grew, and flowers, but you saw nothing but the sea because its blue was so deep, so very deep. They tell of beautiful things better than of anything else, and they like best to read of them. The boys are materialists who have no use for a yesterday whose shadow they can't see on today, and there is no tomorrow, except

as they've laid hands on it. *Here*, and *now* and *us*, that's the one test of interest.

While the boy may lack many of the qualities which the girl possesses, he has much more curiosity, and he is not prone to accept a judgment merely because the book says so or teachers proclaim aloud the saying. The treatment a student theme, descriptive of a cold day, received at the hands of each group illustrates the difference. The author heaped one chill idea on another in a way that delighted the girls. When the boys heard it, there was little enthusiasm, and five of them, as if truth itself had been assaulted, hastened to point out that it did *not* snow when it was ten degrees below zero. I bowed humbly to superior masculine intelligence; I had not noticed the flagrant error. One of our teachers treasured for years an excellent example of an essay, written by a Junior girl, and each year she read it as a sample essay. For years her classes were duly impressed, but this year, in a class composed of twenty-two boys and six girls, male leadership asserted itself, and she learned—what she never suspected—that it was a very poor essay. My boys bring in far more of the actual outside world than do the girls, who enjoy, at least for forty minutes a day, living with fancy and imagination. One of the boys, in describing a hot day, spoke of the pavement becoming soft and yielding, only to be told that that was true *only* when the asphalt was poor, or poorly laid. The observation of this captious critic was founded upon actual experience, for, "Haven't you noticed [addressing me] that East Avenue paving never gets soft, while at Euclid and South Boulevard, where the men have patched it, it always gives on hot days?" Now I live on East Avenue, and cross Euclid and South Boulevard frequently, yet not once had I read this page of scientific lore open at my very feet.

As a check upon my own observations in the differences noted in girl and boy groups, I asked the heads of the manual training and biological departments, the only ones in our school where girls and boys are segregated, what differences were noted in the handling of the two groups. The head of the science department said that in science the boys were more careless in written work than girls, that they evinced a greater interest in experiments, were more

original, had much more curiosity, were alert to possibilities, that their general information in science was much greater. Doing and action are their passwords. They ask better questions, their interest is more transient, they demand more of the teacher. She epitomized these differences by saying that if a direction was given for heating a test tube, (work in science is done in pairs) one would hear Sarah in the girl's group, "Helen, *you* may heat the test tube," while in the boy's group one heard a compelling voice, "Here, let me do that," and a scuffle would follow for the possession of the test tube. The manual training head observed in his classes many of the characteristic differences observed in science and English. He finds the girls interested always, busier, more continuously industrious than the boys, capable of asking good questions, but lacking the initiative of meeting unexpected problems. His most striking statement of their divergence was that one could start a group of boys on work and leave them; in contrast to this, in the class of girls one must be in the room constantly to give demonstrations and directions, or else the work is checked whenever a new situation arises, for the girl is unable to cope with this.

With the differences observed in segregated classes in English, science, and manual training one is forced to recognize that these differences do exist, and one must remember, too, that these differences are just as actual in the mixed as in these segregated groups; that it is not good class teaching if the work is stimulating to only one-half or two-thirds of the class. If this study accomplishes nothing else, it has made me supersensitive to the individual differences in my classes; and while the boy or girl who does satisfactory work, recognized and rewarded by group approval, is a joy forever to me, my chief interest just now centers in the class sphinxes, those who do not respond to any ordinary class stimulus. In my two Freshman sections, because of all the differences pointed out, when the lesson with the girls has been excellent, I yield them credit because of their ability and responsiveness. When in the boys' class the work is keen, stimulating, and absorbing, my own spent feelings whisper that the teacher has been at least a small factor in its success.

To check Freshman abilities in English with the upperclassmen I tabulated all A's and AA's given in Freshman, Sophomore, Junior, and Senior English, with this result:

TABLE II

CLASS	NO. IN CLASS	NO. OF A's, AA's	No. of A's, AA's		PERCENTAGE OF A's, AA's		PERCENTAGE OF STUDENTS MAKING AA, A	
			Boys	Girls	Boys	Girls	Boys	Girls
Senior.....	284	63	22	41	35	65	7.7	14.4
Junior.....	298	48	11	37	23	77	3.6	12.7
Sophomore.....	507	85	29	56	35	65	5.7	11.0
Freshman.....	644	61	17*	43	29	71	2.6	6.6

* It should be explained here that of the seventeen Freshman boys ranking A, nine came in in February of last year—i.e., were now in their second semester. Of the incoming Freshman boys, only eight were ranked A in English after seven weeks in high school.

This table means that in the Oak Park High School in the Sophomore and Senior classes the girls make approximately twice as many A's and AA's as do the boys, while in Freshman and Junior classes three times as many A's and AA's are made by girls as boys.

Will it do to repeat that the English teacher may react variously to these rather commonplace figures? She—I use the pronoun with due discretion—may blink the question by arguing that English merely bridges the chasm between literacy and illiteracy, satisfies the college requirements, and that the boy with shining morning face creeping like a snail unwillingly to his English lesson is a thing to be accepted as a necessary part of the day's work. Some of us, on the other hand, prefer to accept this as a challenge. We feel that the boy will be a better engineer, chemist, lawyer, if he may be shown the abundant life in the field of English. We who have lived in this field have all confidence in its vital quality. The presence of our masters in English denies the assertion that English is not for red-blooded men. The problem, then, is one of curriculum and methods. This paper will consider only the question of the curriculum. What are the things to consider in shaping a curriculum that will hold the interest of our Oak Park boys as well as our girls, and gather from them the tribute gained from the girls?

Will you not agree with me that this problem of boy and girl reactions which I planned to study, planned scientifically, so far as school authority could shape it, has offered not one but many problems? Lest I seem to accord the girls the advantage in this comparison, let me say that it is just as important to develop in girls initiative and curiosity as correctness and imagination in the boys. I should be bereft of all curiosity did I not attempt to find some explanation for all these differences and to see if some of these gaps may not be bridged by the close of the year.

Experimentation in teaching fast- and slow-moving classes has crept into the English departments of some of our schools. Two experiments of this type for the (Illinois Association) Committee on Curriculum Reconstruction in English were planned for this year. Miss Wilcox, of the Springfield High School, presented a most valuable paper for the Illinois Association of Teachers of English in which she reported the Springfield experiment. Failure in bringing all students to the desired minimum of correctness, and the impossibility of shifting all the delinquents into one class for further drill, led the English Department to embark on this experiment. At the end of the first seven weeks a test was given to every pupil in the Department. A scale was constructed for error deductions. The test was carefully planned and included, not only mechanics, but content, and speed and comprehension in sight reading. The examination was made up of four divisions. The first required that knowledge gained in literature should be applied in Composition. For example, Sophomores who had been reading *Silas Marner*, and in composition had been writing news articles, were asked to write for the evening paper a news story on the death of Molly, or Silas' trial at Lantern Yard. The second division tried to test the power of judgment; for example, Juniors were asked to state Burns's attitude on these: animals, poverty versus wealth, religion, home, and love, substantiating statements by reference to his poems. The third part attempted to test appreciation of moral and aesthetic ideals. Beginning Juniors were to quote a memorized poem, and to point out in this poem five claims, of Bryant's poetry, to beauty. The fourth section was a sight-reading test for rate and comprehension which needs no explanation. In

testing papers the following scale was used: perfect content grade 35 per cent, judgment, 25 per cent, appreciation, 15 per cent, comprehension, 25 per cent. Mechanical errors were graded by a separate scale, based on so many errors per 100 words. Medians for the different classes were computed, and classes compared. The Springfield teachers found that Freshmen were not so ignorant as they had been prone to think; that in the following five semesters the teachers had not succeeded in increasing their knowledge and accuracy in mechanical details. What they do not know is whether those results are creditable. This may be learned only by comparison with like experiments in other schools. Miss Wilcox is eager to pool results. She is emboldened by a great need and sends her Macedonian cry to you to come over and help.

The English Department in the Rockford High School, under the direction of Miss Wilbur, is experimenting now with varied subject-matter with A, B, and C groups. The University High School, J. Sterling Morton at Cicero, and Oak Park are schools I know doing this type of experimental work. A different attack upon this varied ability problem is the Springfield plan of supplementary work. All these experiments are valuable to the local high school, but the larger purpose is accomplished only by wider experiment in other schools as a basis of comparison.

Miss Bertha Smith, of the Oak Park High School, correlated the abilities in reading with the general grades in high school. She constructed four different tests that would illustrate four different types of reading of which a pupil must make use in his school work. A problem-solving test, one in which the pupil was required to find the central idea, one based on purely informational material, and one which tested ability to follow plot were given to 173 pupils in the Oak Park High School. The tables show interesting relations between boys and girls in these varied abilities in reading and their general school subjects. The requests which Miss Smith receives for these tests from all over the country show the need for more available experimental work and the value of her study.

Do not these experiments, that of my study of boy and girl reactions, the two performed in Springfield, and the one worked out by Miss Smith, show that there is nothing difficult or impossible

in such problems to the interested teacher? Such problems are in every school; most principals are friendly to the things undertaken by aggressive departments, but the responsibility of initiating the plan rests with the teacher. Professor Paul has found the "attitude of principals kindly toward experiments directed by the Illinois Association of Teachers of English," Professor Lyman finds that "principals welcome the aggressive attitude of any department," Professor Judd finds "principals glad to see innovations introduced, but they hardly know how to direct them," Professor Rugg believes "principals more open to experimentation than formerly." It remains for us to recognize classroom problems, formulate them, and then with the co-operation of the principal make them the basis for scientific study.

For is not this method of scientific classroom experiment far more valuable than our old one of personal judgments? To change classroom methods and curriculum material because authority judges this method or that book best, whether we happen to agree or not, is neither very safe nor very honest. Have not many of us wasted the time of the pupil and misspent our own energies in teaching books we knew to be of little value? Have we not kept the present outgrown text because we had only opinion, not fact, on which to base our claims? How much more effective is it to have absolute fact on which to base our claims! One may say with confidence, "*This* is preferable to *that*, because of *this* result, and *this*, and *this*." One has no recourse if superior judgment, or shall I say superior authority, questions the decision based on personal judgment. Has your groping to find the best way to present a certain subject always meant progress, as you shifted methods and emphases? The only way really to know is to record experiments, and compare results. How much of our work would bear the scrutiny of an efficiency expert in English, had we a language yardstick with which to measure results? We are told that English has borne a charmed life, but that now she must prove her claim to such a generous portion of the curriculum. Classroom experiment is a potent factor in justifying our subject.

So many interesting problems challenge our attentions that we need only to choose. May I hope that some of these suggestions

will interest you and make you desire to try some of them in your own school? Psychologists tell us that good impulses should be translated into action; therefore, this plea is for actual workers. I am not an educational revivalist, but I am asking for "joiners." The National Council, or our Illinois Committee on the Reconstruction of the Curriculum in English, will gladly direct the work. Here are some problems which our educators would like to see worked out: (1) An experiment in making wider use of modern literature. (2) An *effective* attempt at co-operation among the teachers of the school. (3) Work done in the training of high-school students in reading, by differentiation of entering Freshman classes. (4) In the junior high school, the teaching of pupils' habits of silent reading. (5) The abolition of formal class recitation work, with a substitution of individual work by laboratory methods. (6) Which results in the greater amount of progress, the "project method" or that presupposed by C. H. Ward? (7) In junior high school let one section receive the sort of training in assimilative or study reading recommended by Dr. Lyman in the *School Review* (October, 1920), and a control group be allowed to go on as at present. Compare changes in grades in all subjects for month or semester. This should establish the causal connection between reading ability and success in other subjects which we now *infer* from the high correlation.